

Remarks/Arguments

Reconsideration of this application is requested.

Power of Attorney

Submitted herewith is a new Power of Attorney appointing the undersigned to prosecute this application. Future correspondence should be directed to the undersigned, as provided in the Power. Additionally, please note that the new attorney docket number for this application is 109934-32.

Extension of Time

Submitted herewith is a request for a three month extension of the period within which to respond to the Office Action mailed on February 28, 2003. The extended period for response expires on August 28, 2003.

Drawings

The drawings are objected to under 37 CFR 1.83(a) for not showing the control line and control source recited in claim 1. These features have been deleted from claim 1 and, accordingly, applicant submits that the drawings are now in compliance with 37 CFR 1.83(a).

The drawings are also objected to under 37 CFR 1.84(p)(5) for not including the reference numeral '97' mentioned in the description in Figure 5. The attached sheet of drawings adds reference numeral '97' to Figure 5 and replaces the original sheet including Figure 5.

Claim Status

After entry of the foregoing amendment, claims 1, 2 and 4-19 are pending. Claim 3 is canceled, without prejudice.

Claim Objections

Claims 1-12 are objected to as informal because the preamble of the claims recites "a tunable isolator" but the body of the claims recites the isolator as an element with additional elements connected thereto. Applicant has adopted the Examiner's suggestion and has amended all pending claims to recite --a tunable isolator circuit-- in the preamble.

Claim Rejections - 35 USC §103

Claims 1-12 stand rejected as being obvious over United States Patent No. 3,676,803 to Simmons ("Simmons") in view of EP publication 0909024 A2 to Nakamichi ("Nakamichi"). Independent claim 1 has been amended to recite a tunable isolator circuit comprising an isolator, and a matching circuit having a ferro-electric component, that are integrated on one substrate. Neither Simmons nor Nakamichi discloses or suggests an isolator and a matching circuit comprising a ferro-

electric component that are integrated on one substrate. Accordingly, applicant submits that claim 1 is not rendered obvious by Simmons over Nakamichi.

The integration of the matching circuit (with its ferro-electric component) and isolator on one substrate provides numerous advantages. These advantages are fully set forth in the specification and include reduction of the overall loss associated with the integrated device compared to that arising from using discrete parts, thus making it easier to meet specifications, and reduction of the parts count and overall footprint, leading to reduced costs (specification, paragraph 37).

Another important advantage derived from integrating the matching circuit and isolator is that the impedances of the isolator and devices coupled to the isolator, can be naturally matched (specification, paragraph 43). The ability to match the natural output impedance of one device to the input impedance of another device decreases loss in the matching circuit and reduces circuit complexity (specification, paragraphs 44-45). When impedances are naturally matched the constituent ferro-electric components are exposed to relatively lower RF voltages for given powers. Ferro-electric films are typically non-linear, and the reduced RF voltage leads to reduced non-linear distortion. Consequently, the ferro-electric components can be subjected to increased power while maintaining an acceptable level of non-linear distortion. The use of integrated components operating at lower input and output impedances (naturally matched) allows ferro-electric components to be incorporated in applications where higher power levels are required than is typically possible using ferro-electric components matched to the industry standard 50 ohms (specification, paragraphs 79-80).

New claims 13-18, depending from claim 1, are directed specifically to the natural matching ability that flows from integration of the matching circuit and isolator on one substrate. Claims 13-14 are directed to an output matching circuit that provides a natural match between the isolator output and a duplexer; claims 15-16 are directed to an input matching circuit that provides a natural match between a power amplifier and the isolator input; and claims 17-18 are directed to providing natural matches at both the isolator input and output. New method claims 19 is directed to the novel method of reducing non-linear distortion in a ferro-electric component contained in a matching circuit by integrating the matching circuit and matched component on one substrate so that impedances can be naturally matched.

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Amdt. dated Aug. 22, 2003
Reply to Office Action of Feb. 28, 2003


Conclusion

For the reasons set forth above, applicant submits that claims 1, 2 and 4-19 are in condition for allowance.

Respectfully submitted,
Procopio, Cory, Hargreaves & Savitch LLP

Dated: August 22, 2003

By: _____


Troy M. Schmelzer
Reg. No. 36,667

Procopio, Cory, Hargreaves & Savitch LLP
530 B Street, Suite 2100
San Diego, California 92101-4469
(619) 238-1900